Early Journal Content on JSTOR, Free to Anyone in the World

This article is one of nearly 500,000 scholarly works digitized and made freely available to everyone in the world by JSTOR.

Known as the Early Journal Content, this set of works include research articles, news, letters, and other writings published in more than 200 of the oldest leading academic journals. The works date from the mid-seventeenth to the early twentieth centuries.

We encourage people to read and share the Early Journal Content openly and to tell others that this resource exists. People may post this content online or redistribute in any way for non-commercial purposes.

Read more about Early Journal Content at http://about.jstor.org/participate-jstor/individuals/early-journal-content.

JSTOR is a digital library of academic journals, books, and primary source objects. JSTOR helps people discover, use, and build upon a wide range of content through a powerful research and teaching platform, and preserves this content for future generations. JSTOR is part of ITHAKA, a not-for-profit organization that also includes Ithaka S+R and Portico. For more information about JSTOR, please contact support@jstor.org.

The silver prints were made by Mr. WILLIAM PAULI of the Lick Observatory. Much of the detail in the original negative is, of course, lost in the paper prints. By comparing the three photographs, allowing for the rotation of the planet, no mistake can be made as to whether a given marking actually corresponds to a surface feature of the planet, or whether it is due simply to a defect in the plate. J. M. SCHAEBERLE.

LICK OBSERVATORY, University of California,
September 20, 1897.

PLANETARY PHENOMENA FOR SEPTEMBER, OCTOBER, NOVEMBER AND DECEMBER, 1897.

BY PROFESSOR MALCOLM MCNEILL.

SEPTEMBER.

The Sun crosses the equator and autumn begins at about 11 A.M., P. S. T., on September 22d.

Mercury is an evening star at the beginning of the month, having passed greatest east elongation on August 26th, but it is too near the Sun for naked-eye observations, and passes inferior conjunction on the morning of September 22d. It then becomes a morning star and moves rapidly away from the Sun, so that by the end of the month it rises more than an hour before sunrise, and can be easily seen under good-weather conditions. It is in conjunction with *Jupiter* on September 27th, but the conjunction is not so close, nor are the planets as well situated as they will be at the conjunction which will take place in October.

Venus is a morning star, rising about three hours before sunrise. During the month it moves thirty-six degrees east and nine degrees south through the constellations *Cancer* and *Leo*. On the night of September 24–25th it is very near the first magnitude star *Regulus* (α *Leonis*), passing the star on the north at a distance of about half of the Moon's diameter.

Mars is still an evening star, but it is rapidly nearing conjunction with the Sun, and it can scarcely be seen without telescopic aid, except perhaps during the first few days of the month, when it sets about two hours after sunset. It is also nearly at its greatest distance from the Earth, and least brilliancy. It moves about eighteen degrees east and eight degrees south through the constellations *Leo* and *Virgo.*

Jupiter comes to conjunction with the Sun on the night of September 12–13th, and becomes a morning star; but does not get far enough away to become visible to the naked eye until nearly the end of the month.

Saturn is still in sight as an evening star, but is nearing the Sun. By the end of the month it sets before 8 P.M. It moves about two degrees eastward during the month along the borders of the constellations *Libra* and *Scorpio.* The rings are nearly at their maximum opening.

Uranus is near *Saturn*, about two degrees south at the beginning of the month, and is also moving eastward, but only about half as fast as *Saturn.* It is so near the horizon after sunset that the conditions for visibility are not good.

Neptune is in the constellation *Taurus*, rising quite late in the evening and is too faint to be seen with the naked eye.

OCTOBER.

Mercury is a morning star throughout the month, and during nearly the whole time is in good position for observation in the twilight just before sunrise. It comes to its greatest west elongation on the evening of October 7th, and at that time rises more than an hour and twenty minutes before sunrise. On the morning of October 6th it is very close to *Jupiter*, conjunction occurring at midnight, P. S. T. At the time of nearest approach, the planets are only twelve minutes of arc apart, a distance much less than the semi-diameter of the Moon, and they will show as a fine double star to the naked eye.

Venus is also a morning star, a little nearer the Sun than it was during September. It moves thirty-four degrees east and sixteen degrees south through the constellations *Leo* and *Virgo.* On the afternoon of October 19th it is in conjunction with *Jupiter*, the nearest approach being a little less than the Moon's diameter, *Venus* being twenty-eight minutes north.

Mars is still an evening star, but closer to the Sun than it was in September. It is now only about as bright as the pole star and cannot readily be seen after sunset. During the latter half of the month it reaches its greatest distance from the Earth, about 236,000,000 miles, a distance a little greater than the average maximum distance, and not quite seven times as great as the least possible distance at opposition.

Jupiter is a morning star, rising about two hours earlier than during the corresponding period in September. It moves about four degrees east and south in the western part of the constellation *Virgo.* Its conjunctions with *Mercury* and *Venus* have already been noted.

Saturn is an evening star, nearer the Sun than it was in September, and by the end of the month it will not be an easy object for the naked eye after sunset. It is moving eastward, near the boundary of *Libra* and *Scorpio.*

Uranus is still near *Saturn*, and is also moving eastward, but at a much smaller rate. At the end of the month it is about three degrees west and one degree south of *Saturn.*

Neptune is in about the same position in the eastern part of *Taurus*, as in September.

Occultation of the Pleiades. The Moon will again pass over the *Pleiades* group on the evening of October 13th. As the Moon is then three days after full, the immersions will occur at the bright limb and the emersions at the dark. The eastern part of the United States is better situated than the western for seeing this group of occultations, as the Moon will have passed over a considerable part of the group when it rises in the Pacific States.

NOVEMBER.

Mercury is a morning star quite near the Sun until November 7th, when it comes to superior conjunction with the Sun, and is an evening star for the rest of the month, but does not get far enough away to be easily visible. It is in conjunction with *Mars* on November 12th, with *Uranus* on November 16th, and with *Saturn* on November 18th, but the planets are all too near the Sun for naked-eye observations.

Venus is still a morning star, but it is gradually drawing nearer the Sun, and at the end of the month rises only about an hour and a half earlier. During the month it moves thirty-six degrees eastward and thirteen degrees southward through the constellations *Virgo* and *Libra*, passing four degrees north of *Spica* (α *Virginis*) on the morning of November 7th, and about one degree north of α *Libræ* on the morning of November 25th.

Mars is too near the Sun for observation throughout the month. It comes to conjunction on the morning of November 21st, and changes from an evening to a morning star, moving about twenty-two degrees eastward and southward during the month.

It is in conjunction with *Mercury*, on November 12th, with *Uranus* on November 21st, and with *Saturn* on November 27th. It reached its greatest distance from the Earth toward the end of October, about a month before the time of conjunction.

Jupiter is a morning star, gradually increasing its distance from the Sun and rising earlier. During the month it moves about five degrees eastward and southward in the western part of the constellation *Virgo.* On the morning of November 15th it passes the fourth magnitude star η *Virginis*, the planet being about half of the Moon's apparent diameter south of the star.

Saturn is quite close to the Sun coming to conjunction, and changing from an evening to a morning star on the night of November 24–25th. It moves about four degrees eastward in the constellation *Libra.* It is in conjunction with *Mercury* on November 18th, and with *Mars* on November 27th.

Uranus is near *Saturn*, three degrees to five degrees west, and comes to conjunction with the Sun on the morning of November 21st. It comes to conjunction with *Mars* one hour later, and *Mars*' conjunction with the Sun occurs only three hours later than his conjunction with *Uranus.*

Neptune is retrograding (moving westward) in the constellation *Taurus.*

DECEMBER.

The Sun enters the sign *Capricorn* (not the constellation), and winter begins December 21st, 5 A.M., P. S. T.

Mercury is an evening star, and after the first few days of the month sets more than an hour after sunset, so that it can be seen under good weather conditions during the greater part of the month. It reaches greatest eastern elongation on December 20th, and then sets about an hour and half after sunset.

Venus is still a morning star, but is drawing nearer to the Sun, and by the end of the month it rises less than an hour before sunrise. It moves about forty degrees eastward and seven degrees southward during the month through the constellations *Libra* and *Scorpio.* At the end of the month it is very close to *Mars*, the planets coming to conjunction on the evening of December 30th.

Mars is a morning star, and by the end of the month rises almost an hour before sunrise, but it is still too faint to be easily seen, on account of its great distance from the Earth. Its brightness will keep on increasing throughout the whole of 1898.

Jupiter is also a morning star. Its distance from the Sun is increasing, and by the end of the month it rises at about midnight. It moves about three degrees eastward in the western part of the constellation *Virgo*.

Saturn is also a morning star, and during the month it gets far enough away from the Sun to be seen in the morning twilight. It is in the western part of the constellation *Scorpio*, and moves about three degrees eastward during the month.

Uranus is also a morning star about five degrees west of *Saturn*, in the constellation *Scorpio*.

Neptune is in opposition on the evening of December 12th.

EXPLANATION OF THE TABLES.

The phases of the Moon are given in Pacific Standard time. In the tables for Sun and planets, the second and third columns give the Right Ascension and Declination for Greenwich noon. The fifth column gives the local mean time for transit over the Greenwich meridian. To find the local mean time of transit for any other meridian, the time given in the table must be corrected by adding or subtracting the change per day, multiplied by the fraction whose numerator is the longitude from Greenwich in hours, and whose denominator is 24. This correction is seldom much more than 1^m. To find the standard time for the phenomenon, correct the local mean time by *adding* the difference between standard and local time if the place is west of the standard meridian, and *subtracting* if east. The same rules apply to the fourth and sixth columns, which give the local mean times of rising and setting for the meridian of Greenwich. They are roughly computed for Lat. 40°, with the noon Declination and time of meridian transit, and are intended as only a rough guide. They may be in error by a minute or two for the given latitude, and for latitudes differing much from 40° they may be several minutes out.

PHASES OF THE MOON, P. S. T.

			H. M.
First Quarter,	Sept.	3,	3 13 P. M.
Full Moon,	Sept.	10,	6 12 P. M.
Last Quarter,	Sept.	18,	6 51 P. M.
New Moon,	Sept.	26,	5 46 A. M.

THE SUN.

1897.	R. A. H. M.	Declination. ° ′	Rises. H. M.	Transits. H. M.	Sets. H. M.
Sept. 1.	10 43	+ 8 6	5 33 A.M.	NOON.	6 27 P.M.
11.	11 19	+ 4 22	5 43	11 57 A.M.	6 11
21.	11 55	+ 0 30	5 52	11 53	5 54
Oct. 1.	12 31	− 3 24	6 1	11 50	5 39

MERCURY.

Sept. 1.	12 16	− 5 5	7 49 A.M.	1 32 P.M.	7 15 P.M.
11.	12 24	− 7 1	7 24	1 0	6 36
21.	11 58	− 3 8	6 5	11 55 A.M.	5 45
Oct. 1.	11 37	+ 2 37	4 46	10 55	5 4

VENUS.

Sept. 1.	8 9	+ 19 29	2 21 A.M.	9 25 A.M.	4 39 P.M.
11.	8 58	+ 17 11	2 34	19 34	4 34
21.	9 45	+ 14 4	2 55	9 43	4 31
Oct. 1.	10 32	+ 10 16	3 15	9 50	4 25

MARS.

Sept. 1.	12 17	− 1 12	7 37 A.M.	1 33 P.M.	7 29 P.M.
11.	12 41	− 3 52	7 31	1 18	7 5
21.	13 5	− 6 30	7 24	1 2	6 40
Oct. 1.	13 30	− 9 6	7 19	12 48	6 17

JUPITER.

Sept. 1.	11 18	+ 5 38	6 15 A.M.	12 34 P.M.	6 53 P.M.
11.	11 26	+ 4 48	5 47	12 3	6 19
21.	11 34	+ 3 57	5 19	11 32 A.M.	5 45
Oct. 1.	11 42	+ 3 7	4 50	11 0	5 10

SATURN.

Sept. 1.	15 33	− 17 11	11 49 A. M.	4 49 P.M.	9 49 P.M.
11.	15 35	− 17 22	11 13	4 12	9 11
21.	15 38	− 17 34	10 36	3 35	8 34
Oct. 1.	15 42	− 17 48	10 2	3 0	7 58

URANUS.

Sept. 1.	15 32	− 18 55	11 55 A.M.	4 48 P.M.	9 41 P.M.
11.	15 33	− 18 59	11 16	4 9	9 2
21.	15 35	− 19 5	10 39	3 32	8 25
Oct. 1.	15 37	− 19 11	10 1	2 54	7 47

NEPTUNE.

Sept. 1.	5 27	+ 21 53	11 22 P.M.	6 41 A.M.	2 0 P.M.
11.	5 28	+ 21 53	10 42	6 1	1 20
21.	5 28	+ 21 53	10 4	5 23	12 42
Oct. 1.	5 28	+ 21 52	9 24	4 43	12 2

MINIMA OF *ALGOL*, P. S. T.

	H.	M.		H.	M.
Sept. 2.	12	41 A. M.	Sept. 19.	5	35 A. M.
4.	9	30 P. M.	22.	2	24 A. M.
7.	6	19 P. M.	24.	11	12 P. M.
10.	3	8 P. M.	27.	8	1 P. M.
13.	11	57 A. M.	30.	4	50 P. M.
16.	8	46 A. M.			

PHASES OF THE MOON, P. S. T.

		H. M.
First Quarter,	Oct. 2,	9 31 P. M.
Full Moon,	Oct. 10,	8 42 A. M.
Last Quarter,	Oct. 18,	1 9 P. M.
New Moon,	Oct. 25,	3 28 P. M.

THE SUN.

1897.	R. A. H. M.	Declination. ° ′	Rises. H. M.	Transits. H. M.	Sets. H. M.
Oct. 1.	12 31	− 3 24	6 1 A.M.	11 50 A.M.	5 39 P.M.
11.	13 8	− 7 14	6 12	11 47	5 22
21.	13 45	− 10 54	6 23	11 45	5 7
31.	14 24	− 14 18	6 33	11 44	4 55
			MERCURY.		
Oct. 1.	11 37	+ 2 37	4 46 A.M.	10 55 A.M.	5 4 P.M.
11.	12 7	+ 1 16	4 51	10 46	4 59
21.	13 4	− 4 56	5 21	11 4	4 47
31.	14 6	− 11 51	6 7	11 26	4 45
			VENUS.		
Oct. 1.	10 32	+ 10 16	3 15 A.M.	9 50 A.M.	4 25 P.M.
11.	11 18	+ 5 57	3 37	9 57	4 17
21.	12 3	+ 1 18	3 59	10 3	4 7
31.	12 49	− 3 29	4 20	10 9	3 58
			MARS.		
Oct. 1.	13 30	− 9 6	7 19 A.M.	12 48 P.M.	6 17 P.M.
11.	13 55	− 11 37	7 14	12 34	5 54
21.	14 22	− 14 0	7 9	12 21	5 33
31.	14 49	− 16 15	7 6	12 9	5 12
			JUPITER.		
Oct. 1.	11 42	+ 3 7	4 50 A.M.	11 0 A.M.	5 10 P.M.
11.	11 50	+ 2 17	4 21	10 29	4 37
21.	11 57	+ 1 29	3 52	9 57	4 2
31.	12 5	+ 0 43	3 23	9 25	3 27
			SATURN.		
Oct. 1.	15 42	− 17 48	10 2 A.M.	3 0 P.M.	7 58 P.M.
11.	15 46	− 18 2	9 27	2 24	7 21
21.	15 50	− 18 17	8 53	1 49	6 45
31.	15 55	− 18 32	8 19	1 14	6 9

URANUS.

	R. A.	Declination.	Rises.	Transits.	Sets.
1897.	H. M.	° ′	H. M.	H. M.	H. M.
Oct. 1.	15 37	− 19 11	10 1 A.M.	2 54 P.M.	7 47 P.M.
11.	15 39	− 19 18	9 25	2 17	7 9
21.	15 41	− 19 25	8 49	1 40	6 31
31.	15 43	− 19 34	8 12	1 3	5 54

NEPTUNE.

Oct. 1.	5 28	+ 21 52	9 24 P.M.	4 43 A.M.	12 2 P.M.
11.	5 28	+ 21 52	8 45	4 4	11 23 A.M.
21.	5 27	+ 21 51	8 5	3 24	10 43
31.	5 26	+ 21 50	7 25	2 44	10 3

MINIMA OF *ALGOL*, P. S. T.

	H.	M.		H.	M.
Oct. 3.	1	39 P. M.	Oct. 20.	6	32 P. M.
6.	10	27 A. M.	23.	3	21 P. M.
9.	7	16 A. M.	26.	12	10 P. M.
12.	4	5 A. M.	29.	8	58 A. M.
15.	12	5 A. M.	Nov. 1.	5	47 A. M.
17.	9	43 P. M.			

PHASES OF THE MOON, P. S. T.

		H. M.
First Quarter,	Nov. 1,	6 37 A. M.
Full Moon,	Nov. 9,	1 50 A. M.
Last Quarter,	Nov. 17,	6 2 A. M.
New Moon,	Nov. 24,	1 20 A. M.
First Quarter,	Nov. 30,	7 14 P. M.

THE SUN.

	R. A.	Declination.	Rises.	Transits.	Sets.
1897.	H. M.	° ′	H. M.	H. M.	H. M.
Nov. 1.	14 28	− 14 37	6 34 A.M.	11 44 A.M.	4 54 P.M.
11.	15 8	− 17 35	6 45	11 44	4 43
21.	15 49	− 20 3	6 57	11 46	4 35
Dec. 1.	16 32	− 21 54	7 8	11 49	4 30

MERCURY.

Nov. 1.	14 13	− 12 31	6 11 A.M.	11 28 A.M.	4 45 P.M.
11.	15 15	− 18 25	6 57	11 52	4 47
21.	16 20	− 22 49	7 39	12 17 P.M.	4 55
Dec. 1.	17 26	− 25 19	8 17	12 44	5 11

VENUS.

Nov. 1.	12 54	− 3 58	4 22 A.M.	10 9 A.M.	3 56 P.M.
11.	13 40	− 8 40	4 46	10 16	3 46
21.	14 28	− 13 5	5 10	10 25	3 40
Dec. 1.	15 17	− 16 58	5 33	10 34	3 35

MARS.

1897.	R. A. H. M.	Declination. ° ′	Rises. H. M.	Transits. H. M.	Sets. H. M.
Nov. 1.	14 52	− 16 28	7 4 A.M.	12 7 P.M.	5 10 P.M.
11.	15 20	− 18 29	7 1	11 56 A.M.	4 51
21.	15 49	− 20 15	6 58	11 46	4 34
Dec. 1.	16 19	− 21 44	6 55	11 37	4 19
			JUPITER.		
Nov. 1.	12 5	+ 0 39	3 19 A.M.	9 21 A.M.	3 23 P.M.
11.	12 12	− 0 4	2 49	8 49	2 49
21.	12 18	− 0 43	2 18	8 16	2 14
Dec. 1.	12 24	− 1 18	1 46	7 42	1 38
			SATURN.		
Nov. 1.	15 55	− 18 34	8 16 A.M.	1 11 P.M.	6 6 P.M.
11.	16 0	− 18 49	7 42	12 36	5 30
21.	16 5	− 19 3	7 9	12 2	4 55
Dec. 1.	16 10	− 19 17	6 35	11 27 A.M.	4 19
			URANUS.		
Nov. 1.	15 44	− 19 34	8 8 A.M.	12 59 P.M.	5 50 P.M.
11.	15 46	− 19 42	7 32	12 22	5 12
21.	15 49	− 19 51	6 57	11 46 A.M.	4 35
Dec. 1.	15 51	− 19 59	6 20	11 9	3 58
			NEPTUNE.		
Nov. 1.	5 26	+ 21 50	7 26 P.M.	2 44 A.M.	10 2 A.M.
11.	5 25	+ 21 49	6 46	2 4	9 22
21.	5 24	+ 21 48	6 5	1 23	8 41
Dec. 1.	5 23	+ 21 47	5 24	12 42	8 0

ECLIPSES OF *JUPITER'S* SATELLITES, P. S. T.

(Off left-hand limb as seen in an inverting telescope.)

		H. M.			H. M.
I, D,	Nov. 2.	6 43 A. M.	I, D,	Nov. 11.	3 4 A. M.
IV, D,	4.	12 45 A. M.	I, D,	18.	4 57 A. M.
I, D,	4.	1 11 A. M.	I, D,	19.	11 26 P. M.
IV, R,	4.	3 24 A. M.	II, D,	21.	6 48 A. M.
III, D,	4.	6 35 A. M.	I, D,	25.	6 51 A. M.
II, D,	7.	1 39 A. M.	I, D,	27.	1 19 A. M.

MINIMA OF *ALGOL*, P. S. T.

	H. M.		H. M.
Nov. 1.	5 47 A. M.	Nov. 18.	10 41 A. M.
4.	2 36 A. M.	21.	7 30 A. M.
6.	11 25 P. M.	24.	4 19 A. M.
9.	8 14 P. M.	27.	1 7 A. M.
12.	5 3 P. M.	29.	9 56 P. M.
15.	1 52 P. M.		

PHASES OF THE MOON, P. S. T.

		H. M.
Full Moon,	Dec. 8,	8 54 P. M.
Last Quarter,	Dec. 16,	8 22 P. M.
New Moon,	Dec. 23,	11 55 A. M.
First Quarter,	Dec. 30,	11 27 A. M.

THE SUN.

1897.	R. A. H. M.	Declination. ° ′	Rises. H. M.	Transits. H. M.	Sets. H. M.
Dec. 1.	16 32	− 21 54	7 8 A.M.	11 49 A.M.	4 30 P.M.
11.	17 15	− 23 4	7 17	11 54	4 31
21.	18 0	− 23 27	7 24	11 59	4 34
31.	18 44	− 23 4	7 36	12 3 P.M.	4 40

MERCURY.

Dec. 1.	17 26	− 25 19	8 17 A.M.	12 44 P.M.	5 11 P.M.
11.	18 32	− 25 32	8 46	1 11	5 36
21.	19 27	− 23 26	8 51	1 26	6 1
31.	19 38	− 20 29	8 10	12 57	5 44

VENUS.

Dec. 1.	15 17	− 16 58	5 33 A.M.	10 34 A.M.	3 35 P.M.
11.	16 8	− 20 6	5 57	10 46	3 35
21.	17 1	− 22 18	6 20	11 0	3 40
31.	17 56	− 23 24	6 40	11 15	3 50

MARS.

Dec. 1.	16 19	− 21 44	6 55 A.M.	11 37 A.M.	4 19 P.M.
11.	16 50	− 22 54	6 51	11 28	4 5
21.	17 22	− 23 40	6 48	11 21	3 54
31.	17 54	− 24 3	6 42	11 14	3 46

JUPITER.

Dec. 1.	12 24	− 1 18	1 46 A.M.	7 42 A.M.	1 38 P.M.
11.	12 29	− 1 48	1 14	7 8	1 2
21.	12 33	− 2 13	12 40	6 33	12 26
31.	12 37	− 2 31	12 6	5 57	11 48 A.M.

SATURN.

Dec. 1.	16 10	− 19 17	6 35 A.M.	11 27 A.M.	4 19 P.M.
11.	16 14	− 19 30	6 2	10 53	3 44
21.	16 19	− 19 42	5 28	10 18	3 8
31.	16 24	− 19 52	4 54	9 43	2 32

URANUS.

Dec. 1.	15 51	− 19 59	6 20 A.M.	11 9 A.M.	3 58 P.M.
11.	15 54	− 20 6	5 43	10 32	3 21
21.	15 56	− 20 13	5 7	9 55	2 43
31.	15 58	− 20 20	4 30	9 18	2 6

NEPTUNE.

1897.	R. A. H. M.	Declination. °	Rises. H. M.	Transits. H. M.	Sets. H. M.
Dec. 1.	5 23	+21 47	5 24 P.M.	12 42 A.M.	8 0 A.M.
11.	5 22	+21 46	4 44	12 2	7 20
21.	5 21	+21 45	3 59	11 17 P.M.	6 35
31.	5 20	+21 44	3 19	10 37	5 55

ECLIPSES OF *JUPITER'S* SATELLITES, P. S. T.

(Off left-hand limb as seen in an inverting telescope.)

		H. M.			H. M.
III, R,	Dec. 3.	1 20 A. M.	II, D,	Dec. 16.	3 49 A. M.
I, D,	4.	3 13 A. M.	III, D,	17.	6 22 A. M.
II, D,	9.	1 14 A. M.	I, D,	20.	1 27 A. M.
III, D,	10.	2 24 A. M.	II, D,	23.	6 24 A. M.
III, R,	10.	5 17 A. M.	IV, D,	24.	6 49 A. M.
I, D,	12.	11 34 P. M.	I, D,	27.	3 20 A. M.

MINIMA OF *ALGOL*, P. S. T.

	H. M.		H. M.
Dec. 2.	6 45 P. M.	Dec. 19.	11 39 P. M.
5.	3 34 P. M.	22.	8 28 P. M.
8.	12 23 P. M.	25.	5 16 P. M.
11.	9 12 A. M.	28.	2 5 P. M.
14.	6 1 A. M.	31.	10 54 A. M.
17.	2 50 A. M.		

THE BRUCE PHOTOMETERS OF THE LICK OBSERVATORY.

By R. G. AITKEN.

[Abstract.]

A paper with the above title was prepared for the September meeting of the Society, and the following abstract is now printed to put on permanent record some data concerning the instruments.

Photometer II. in principle is identical with Photometer H. described in the H. C. O. *Annals*, Vol. XI., p. 1. It consists of a double image prism, which can be moved along the axis of the telescope to any desired distance from the focus, and a NICOL prism in front of the eye-piece, which can be turned by an amount which is measured with a graduated-circle and index.

In practice, the double image prism is moved toward or away from the focus, and the whole instrument turned on its axis, until the ordinary image of one of the stars to be compared is brought as close as is desired to the extraordinary image of the other star — the two remaining images either being cut off by the eye-